TPP-750 User Manual V3C.22

RPS Tankless Pressure Pump™

New!

RPS
Rural Power Systems

America's #1
Solar Water Pumps

888.637.4493
RPSsolarpumps.com
Support@ruralpowersystems.com

Our Pledge to You

Dear Customers,

In an effort to shape the way our company does business, our mission statement includes a series of pledges to you, our customers.

- **We pledge to give you the power!** Controlling your own ability to pump water out of the ground, whether in the field or at home, allows you to be more resilient. Freeing your water source from the grid is a major step towards self-sufficiency. You just bring the DIY spirit! Our engineers will be on the other end to offer specialized knowledge and answer questions, so you can install our solar pumps confidently and gain total control over your water supply.

- **We pledge to be a company our grandfathers would have trusted.** The all-too-common practice of outsourcing customer support after the sale is one we wholeheartedly oppose. We are an American, family-run company and our USA engineers, who will support you before and after the sale, are the best in the industry. We gain most of our business from word-of-mouth as a result of treating customers with respect and standing by our products.

- **No Pressure. Ever.** Our sales team is not on commission—we think this is important. Their role is to match you with the right pump for your well. If we don't have a pump that will suit your needs, we'll help you find a solution elsewhere. Our job is to help get you water, not sell you something that isn't a good fit.

- **We pledge to bring you reliable water!** All manufactured products have occasional issues and we can't claim to be perfect. Well water varies in pH, iron level, and sand content. With that said, we are extremely proud of our 100% track record in getting our customers water. That's right, every single one of our customers is now successfully pumping water with an RPS system. This starts with making sure we supply you with the right pump for your land, and if issues do arise, we will immediately provide technical support and replacement parts so you can get up and pumping again as quickly as possible.

Sincerely,

The RPS Family

Warning: Risk of Electric Shock

Solar panels and batteries can produce a significant amount of energy, which can cause electric shock. Please exercise caution when installing your solar well pump and follow the step-by-step instructions in this manual for your safety.

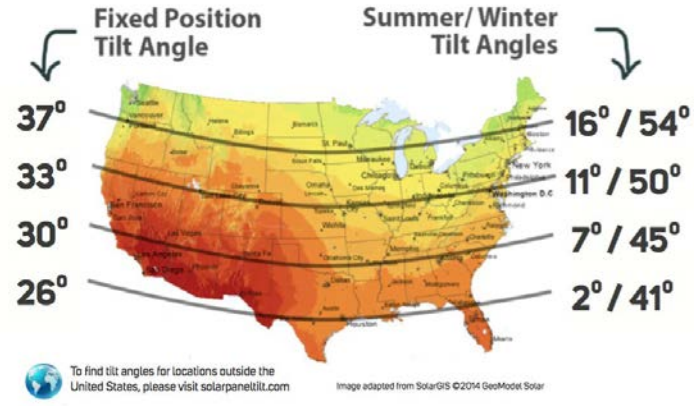
Whenever you're working with wiring or connections, make sure:
- the controller is set to OFF
- solar panels are covered
- there are no exposed wires

Be sure to ground the system for safety and to prevent damage to equipment.

Remember, safety first! RPS is not liable for damage or injuries that result from improper installation technique. If you're unsure about the safety aspects of any step in this manual, please consult an RPS Engineer.

INSTALLATION DETAILS

RPS SOLAR PANELS — Solar panels should be mounted on a secure structure, ground mount or top of pole mount. Several ideas can be found at www.RPSSolarPumps.com. Panels should face true South and at an angle appropriate for your latitude. If you are mounting your panels on an already built structure, try to get as close to the correct angle as possible.



Ensure there are no shadows or other obstructions on the solar panels. While shadowing a small corner of a single panel may not seem like a big deal, since the panels are connected in series, a small shadow can limit the power output from all other panels connected in series! This means a small shadow on a single panel could reduce system power by hundreds of watts. Time to get out that chainsaw and trim some trees!

TPP CONTROLLER — Your Controller is not waterproof and should be located in a **dry dust-free location**, protected from the sun and the elements and pests such as mice and bugs. Mice love to chew wires and spiders and moths will build nests wherever they can find room. While we understand you cannot eliminate all pests, it might be time to spray some insecticides around your shed and set some mousetraps! There is nothing worse than finding insulation chewed off your electrical wires. **The fan remains running in low power mode at all times to protect the equipment. This fan uses very little power and it running, increases the lifetime of the system.*

TPP PUMP - Your pump is designed for use out of the direct elements, sun, rain and snow. Covering or building into a small enclosure is ideal. Since water does expand when it freezes, care should be taken to winterize the system if being used in a climate that experiences hard freezing. If foot valve is being used, care should be taken in plumbing the intake to ensure tight connections which will avoid the loss of prime.

Batteries - Unless you already bought a TPP system that included the appropriate number of RPS 55Ah 12V Deep Cycle GEL batteries, customers will need to supply their own battery bank. RPS recommends 12V AGM / sealed lead acid batteries that are designed for maintenance free operation. More common flooded deep cycle marine or RV batteries can also be used. Batteries should be stored in a dry location protected from the elements.

RPS SOLAR WELL PUMP

With the RPS Tankless Pressure Pump™ system you'll get smooth continuous steady reliable water pressure without the need for AC power or the utility grid.

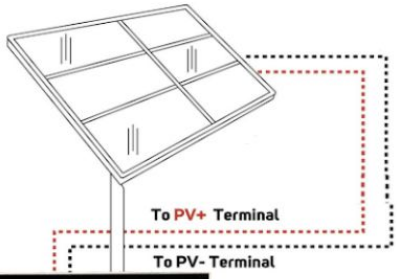
The solar charged battery bank powers a centrifugal booster pump that varies its speed and power based on your demand for water at the exact pressure you select from 20 to 45psi.

Warning: Risk of Electric Shock
Solar panels and batteries can produce a significant amount of energy, which can cause electric shock.
Whenever you're working with wiring or connections, make sure:

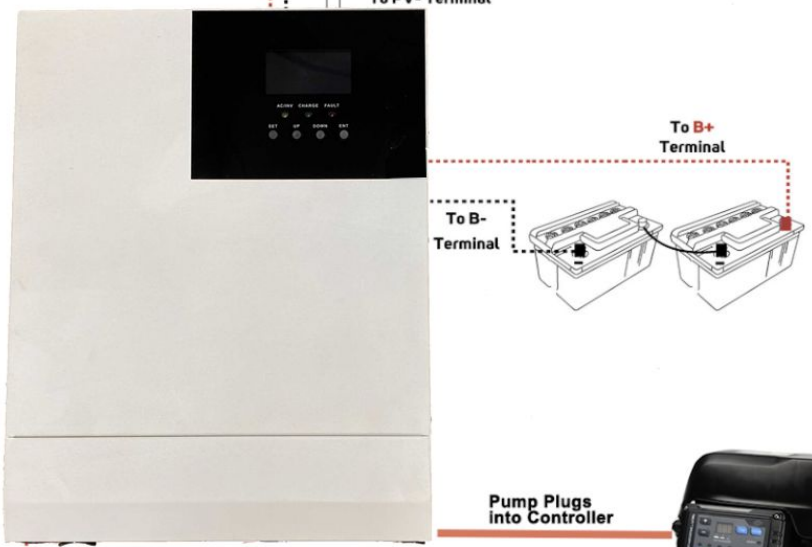
- Solar panels are at least partially covered
- There are no exposed wires

Be sure to ground the system for safety and to prevent damage to equipment.

Remember, safety first! RPS is not liable for damage or injuries that result from improper installation technique. If you're unsure about the safety of any step in this manual, please call an RPS Engineer.

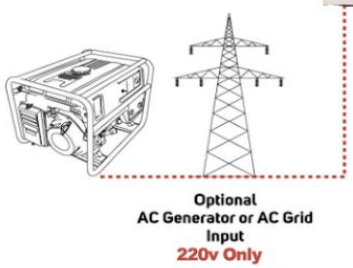


Quick Connect MC4 clips and 20' of solar wire allow for the connection of your solar array to your controller



Pre-attached + and - wires connect the controller to your 24V battery bank (required to operate)

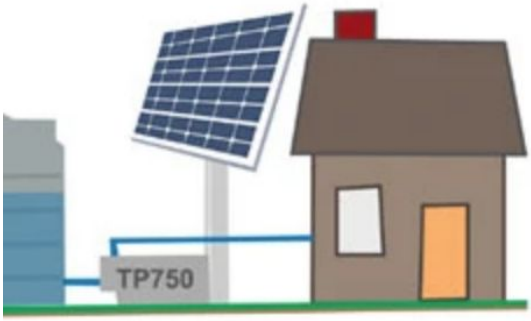
(Optional) 220V power from a generator or the grid can supplement solar in charging the battery bank.



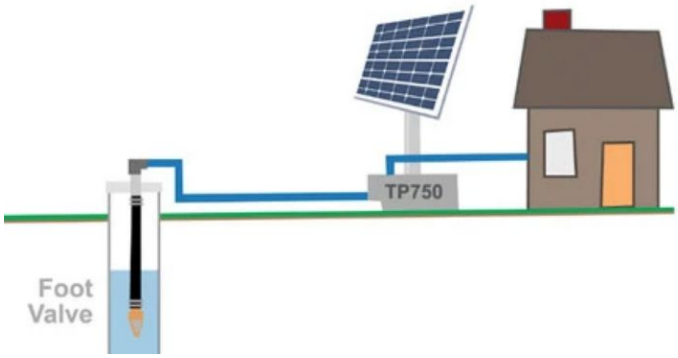
Once the pump is ready for power/primed with water, the pump's 3-prong male plug can be inserted directly into the outlet of the controller.

TPP PLUMBING OPTIONS

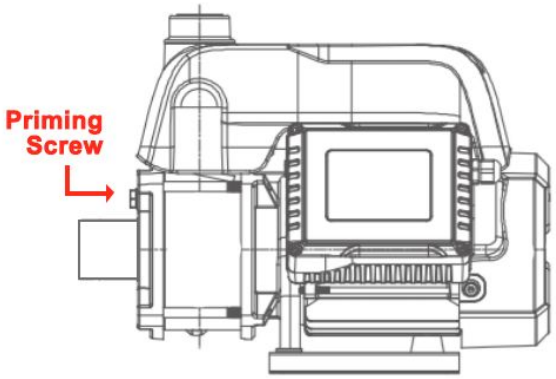
Your **Tankless Pressure Pump** can plumb directly from your storage tank to your main line. It will auto-adjust speed to maintain pressure.



You can also draw water up from a pond, shallow well or cistern (up to 15ft) but you must maintain prime with a foot-valve and tight connections.



PRIMING YOUR PUMP



1. Loosen Priming Screw.
2. Create positive pressure in supply line to push water into pump inlet or fill line with water
3. Once air is completely purged, power on the pump to purge air completely before fully tightening Priming Screw again
4. Adjust Pressure Setting with controls. Pump will adjust speed and smoothly cycle on & off to maintain desired setting.

NEW: Wire Priming 'hook' in the kit allows you to reach into the top outlet of the pump and pull up the small ring on the check valve so you can pour water in the top and fill the chamber easily.

PRIMING VIDEO: ** Very Helpful
http://www.youtube.com/c/RPSSolarPumps

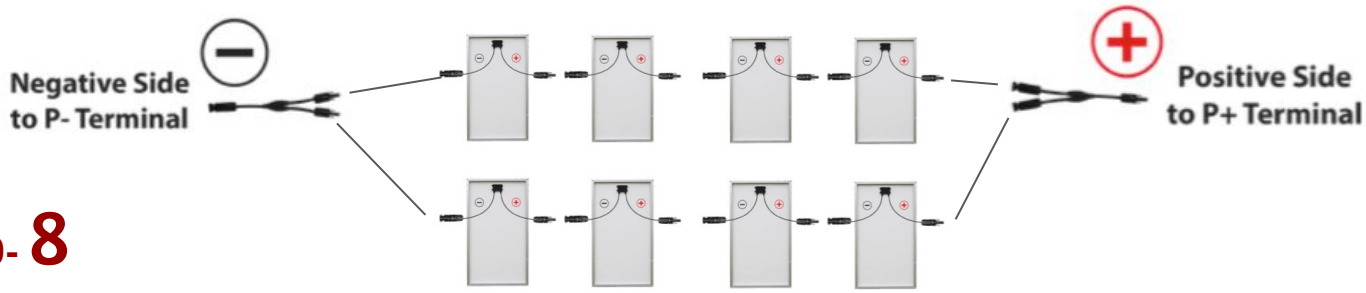
** **Important:** Care should be taken when plumbing to ensure tight connections and maintain prime. Use teflon tape or thread sealant on all connections. Minor leaks or seepage will cause the pump to cycle and deplete the batteries.*

WIRING YOUR SOLAR PANELS

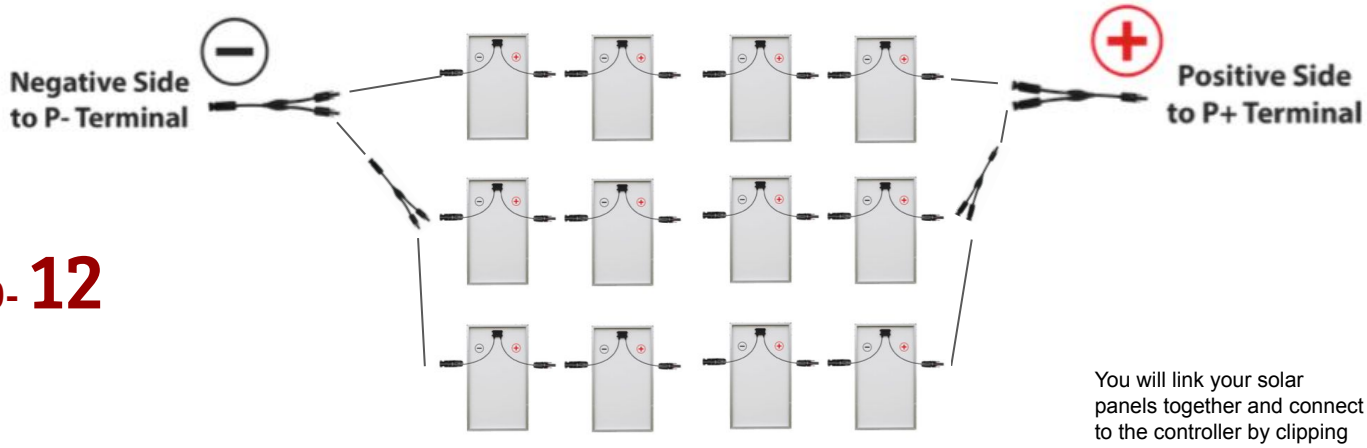
WARNING: RISK OF SHOCK! Solar panels, especially when connected in series and parallel, can produce a significant amount of energy, which can cause electric shock. Cover the solar panels with a cloth or tarp when you're working with the wires.

TP-750- 4

TP-750- 8



TP-750- 12

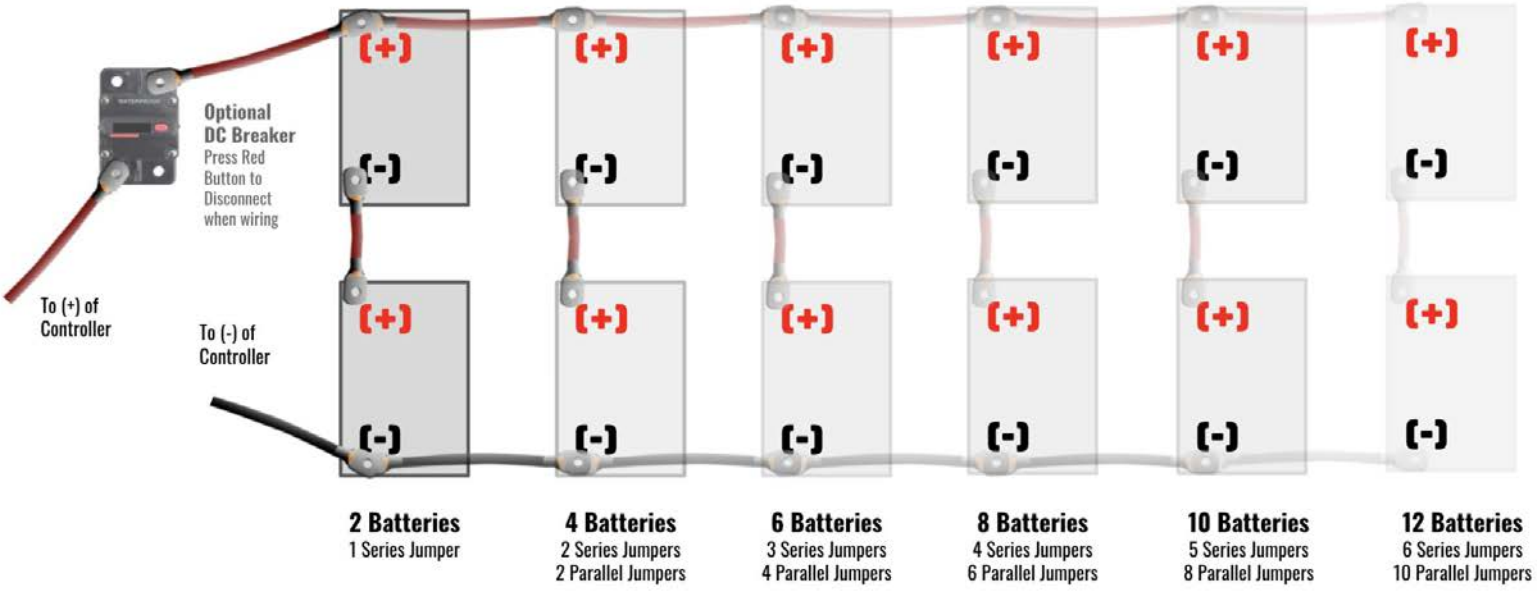


Note: If using your own solar panels do not exceed 90Voc input! Ask an RPS Engineer how to wire if you're unsure!

You will link your solar panels together and connect to the controller by clipping **MC4 connectors** together. Each MC4 connector is either a male end or female end (see image). They simply snap together to make safe and easy connections.

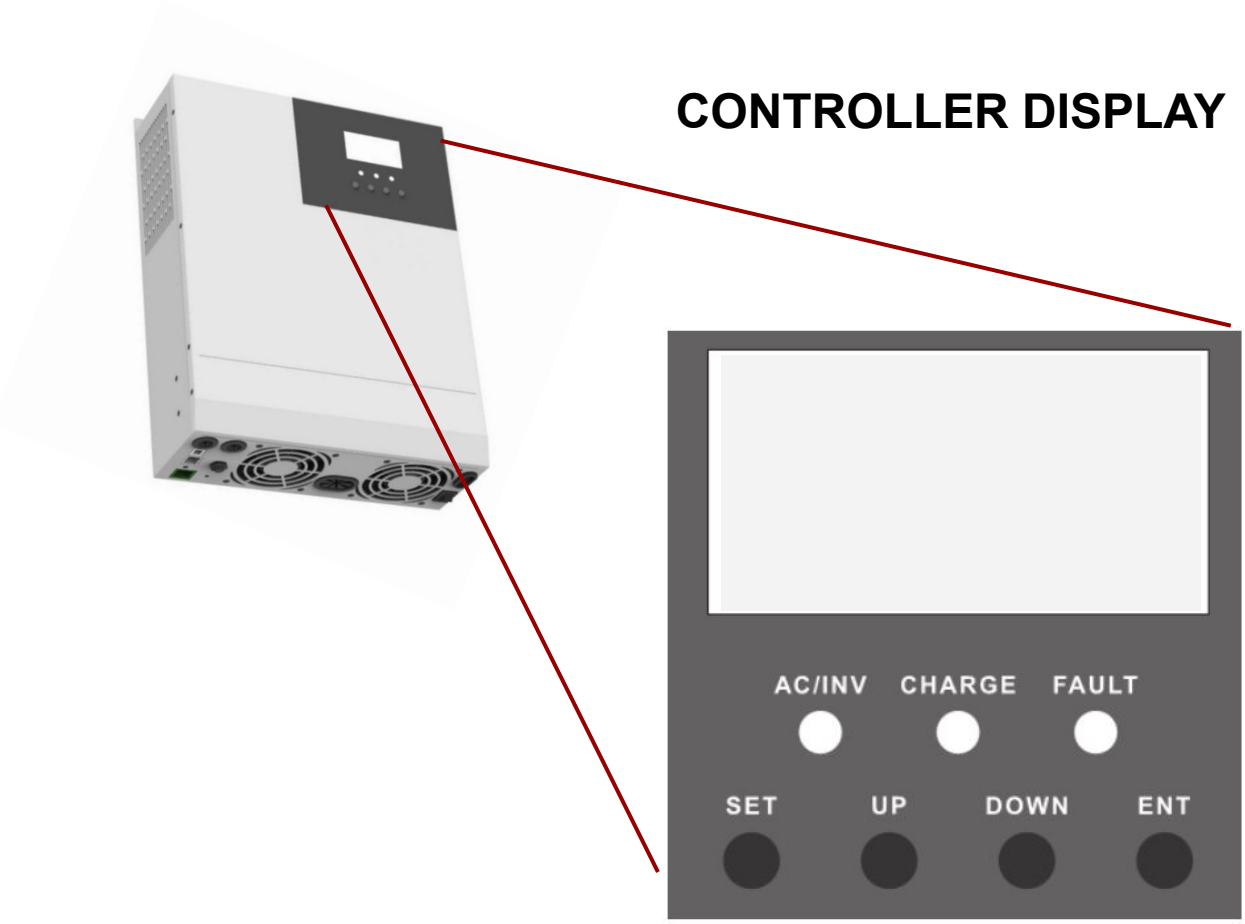
BATTERY WIRING 24V ONLY

RPS recommends AGM / sealed lead acid batteries that are designed for several maintenance free years of operation. They should also be stored in a dry location protected from the elements. To prevent significant voltage drop, the batteries should be located as close to the Controller as possible. Within 3 feet is ideal. If further than 3ft is required, the wires may be extended using appropriate gauge cables. The batteries operate best at room temperature and it is best to keep them out of freezing conditions for maximum performance.



Note: **Do not exceed two 12V batteries in series or four 6V batteries in series. For extra battery capacity add sets in parallel.**

CONTROLLER DISPLAY



The factory settings of the TP750 controller accommodate almost every install scenario of a Tankless Pressure Pump. RPS Engineers recommend leaving them at their default settings to ensure proper operation.

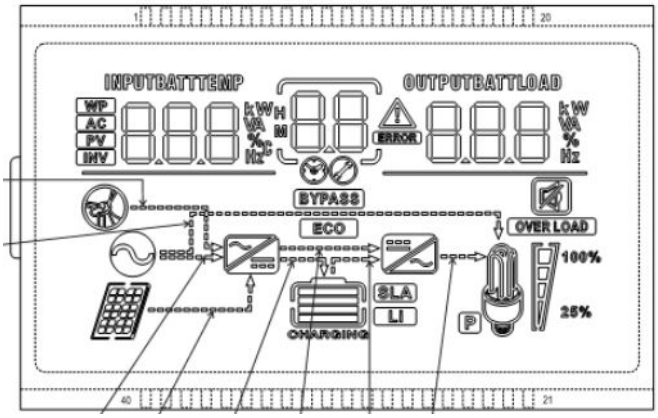
Operation buttons introduction

Function buttons	Description
SET	Enter/Exit Settings menu
UP	Previous choice
DOWN	Next choice
ENT	Confirm/Enter Options under the settings menu,

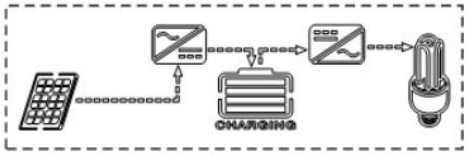
Indicators introduction

Indicators	Colors	Description
AC/INV	Yellow	Steady on: Mains output
		Flash: Inverter output
CHARGE	Green	Flash: Battery charging
		Steady on: Charging completed
FAULT	Red	Steady on: Fault state

DISPLAY DETAILS



Icons	Functions	Icons	Functions
	Indicates that the AC input terminal has been connected to the grid		Indicates that the inverter circuit is working
	Indicates that the AC input mode in APL mode (wide voltage range)	BYPASS	Indicates that the machine is in the Mains Bypass mode
	Indicates that the PV input terminal has been connected to the solar panel	OVER LOAD	Indicates that the AC output is in an overload state
	Indicates that the machine has been connected to the battery: indicates that the remaining battery is 0%~24%; indicates that the remaining battery is 25%~49%; indicates that the remaining battery is 50%~74%; indicates that the remaining battery is 75%~100%.		Indicates the percentage of AC output loads: indicates that the load percentage is 0%~24%; indicates that the load percentage is 25%~49%, indicates that the load percentage is 50%~74%, indicates that the load percentage is ≥75%.
LI	Indicates that the battery type of the machine is a lithium battery		Indicates that the buzzer is not enabled



DEFAULT
Hybrid Mode

SLA	Indicates that the current battery type of the machine is a lead-acid battery		Indicates that the machine has an alarm
CHARGING	Indicates that the battery is in charging state	ERROR	Indicates that the machine is in a fault condition
	Indicates that the AC/PV charging circuit is working		Indicates that the machine is in setup mode
	Indicates that the AC output terminal has an AC voltage output		The parameters displayed in the middle of the screen: 1. In the non-setup mode, the alarm or fault code is displayed. 2. In the setup mode, the currently set parameter item code is displayed.
Parameters display on the left side of the screen: input parameters			
AC	Indicates AC input		
PV	Indicates PV input		
INV	Indicates inverter circuit		
WP	This icon is not displayed		
	Display battery voltage, battery charge total current, mains charge power, AC input voltage, AC input frequency, PV input voltage, internal heat sink temperature, software version		
Parameters display on the right side of the screen: Output parameters			
	Indicates output voltage, output current, output active power, output apparent power, battery discharge current, software version; in setup mode, displays the set parameters under the currently set parameter item code		
Arrow display			
①	The arrow is not displayed	⑤	Indicates the charging circuit charging the battery terminal
②	Indicates the grid supplying power to the load	⑥	The arrow is not displayed
③	Indicates grid supplying power to the charging circuit	⑦	Indicates the battery terminal supplying power to the inverter circuit
④	Indicates PV module supplying power to the charging circuit	⑧	Indicates the inverter circuit supplying power to the load

220V AC INPUT (Only if Required)

Your Controller is designed to take solar power and charge your 24v battery bank. As an optional backup, it is also setup to accept 220V AC to both charge your batteries and run your pump directly if desired. AC input can be wired directly into the screw terminals of your controller, by removing the front cover plate.

Wiring 220v is only for certified professionals or those familiar with 220v power.

PUMP MODES

MODE to select the working mode:

1. NORMAL (most common)
Increases the water pressure or draws water up from below pump and pressurizes. This is the normal booster pump application.

- **1.0 - 2.0 Low Pressure**
- **2.0 - 3.0 Medium Pressure**
- **3.0 - 4.0 High Pressure**

Note: Pump shutoff will become unstable if pressure is set too high. If pump will not shut-off, reduce pressure setting

2. BOOST
Increases poor water pressure. For example increasing 20PSI water pressure to 45PSI on a the second story of a house.

3. TIMER
Operates for the specified amount of time and then stops the pump. Used for filling elevated tanks.

LOCK / UNLOCK Hold + and - together

SYSTEM RESET OPTIONS:

POWER RESET:
Controller Soft Reset: Turn off controller power button (display will stay on if solar panels are connected), wait 60 seconds and turn power button back on.
Controller Hard Reset: Disconnect solar panels and batteries. Wait 60 seconds, connect batteries, then solar panels.
Pump Hard Reset: Unplug pump, wait 60 seconds, plug pump back in.

PUMP SETTINGS RESET:
Pump Factory Reset: Press and hold MODE for 3 seconds, all factory parameters will be restored to factory settings.

CONTROLLER TROUBLESHOOTING

Your Controller is **not waterproof and should be located in a dry dust-free location**, protected from the sun and the elements and pests such as mice. moths and bugs. Mice love to chew wires and spiders and moths will build nests wherever they can find room. While we understand you cannot eliminate all pests, it might be time to spray some insecticides around your shed and set some mousetraps! There is nothing worse than finding insulation chewed off your electrical wires or moths clogging the units fan.

**The fan remains running in low power mode at most times to protect the equipment. This fan uses very little power and it running, increases the lifetime of the system.*

Faults	Handling measures
No display on the screen	Check if the battery air switch or the PV air switch has been closed; if the switch is in the "ON" state; press any button on the screen to exit the screen sleep mode.
Battery overvoltage protection	Measure if the battery voltage exceeds rated, and turn off the PV array air switch and Mains air switch.
Battery undervoltage protection	Charge the battery until it returns to the low voltage disconnection recovery voltage.
Fan failure	Check if the fan is not turning or blocked by foreign object.
Heat sink over temperature protection	When the temperature of the device is cooled below the recovery temperature, normal charge and discharge control is resumed.
Bypass overload protection, inverter overload protection	① Reduce the use of power equipment; ② Restart the unit to resume load output.
Inverter short circuit protection	① Check the load connection carefully and clear the short-circuit fault points; ② Re-power up to resume load output.
PV overvoltage	Use a multimeter to check if the PV input voltage exceeds the maximum allowable input voltage rated.
Battery missed alarm	Check if the battery is not connected or if the battery circuit breaker is not closed.

VOLTAGE CHECK
Take a DC Voltage Reading of each battery. Battery voltages range from 11.5VDC (dangerously low) to 14.4VDC (fully charged) depending on the state of charge. Low voltages? Charge for 8 hours in full sun.

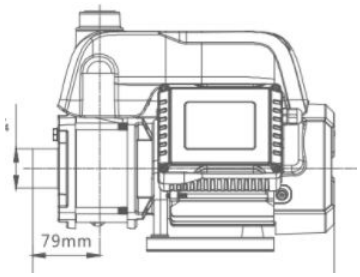
SOFT RESET
Press and Release Power Switch

HARD RESET
Disconnect Batteries and Solar Panels for 60 seconds. Reconnect.

Real-time data viewing - On the LCD main screen, press the “UP” and “DOWN” buttons to scroll through the real-time data of the controller unit.

Page	Parameters on the left side of the screen	Parameters in the middle of the screen	Parameters on the right side of the screen
1	INPUT BATT V (Battery input voltage)	Fault code	OUTPUT LOAD V (Output load voltage)
2	PV TEMP ℃ (PV charger heatsink temperature)		PV OUTPUT KW (PV output power)
3	PV INPUT V (PV input voltage)		PV OUTPUT A (PV output current)
4	INPUT BATT A (Input battery current)		OUTPUT BATT A (Battery output current)
5	INPUT BATT KW (Battery input power)		OUTPUT BATT KW (Battery output power)
6	AC INPUT Hz (AC input frequency)		AC OUTPUT LOAD Hz (AC output frequency)
7	AC INPUT V (AC input voltage)		AC OUTPUT LOAD A (AC output load current)
8	INPUT V (For maintain)		OUTPUT LOAD KVA (Load apparent power)
9	INV TEMP ℃ (AC charge or battery discharge heatsink temperature)		INV OUTPUT LOAD KW (Load active power)
10	APP software version		Bootloader software version
11	Model PV Voltage Rating		Model PV Current Rating
12	Model Battery Voltage Rating		Model Output Power Rating

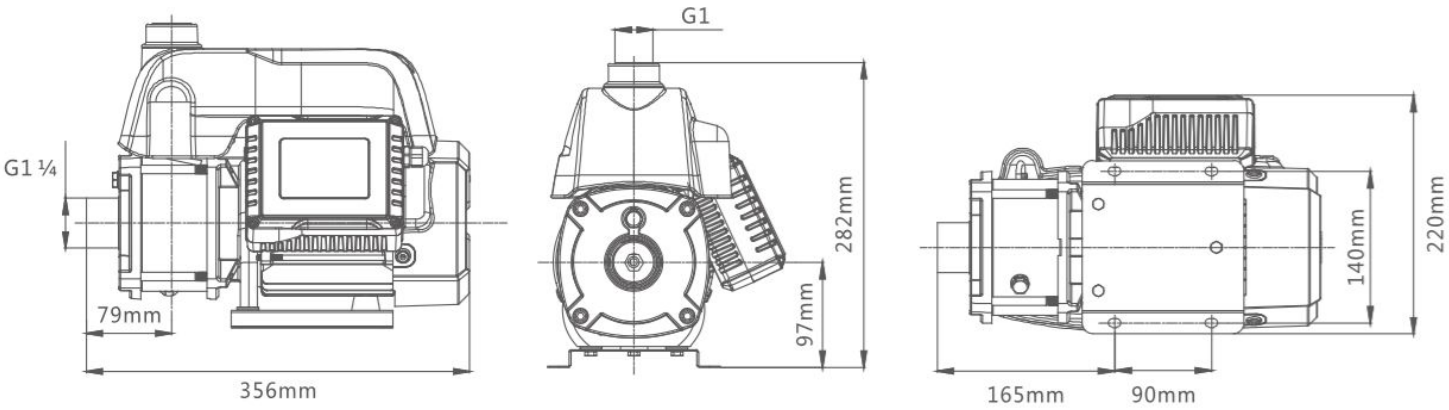
PUMP TROUBLESHOOTING



Hard Reset
Unplug pump, wait 60 seconds, plug pump back in.

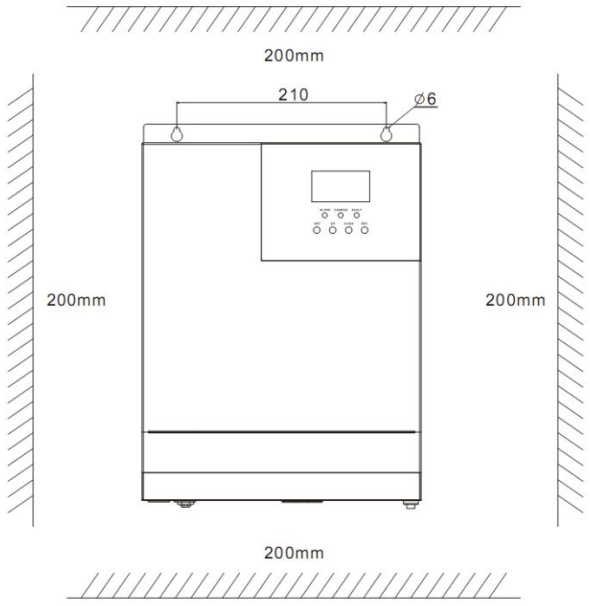
No Lights On Pump	Low or no power To pump	Check Connections, Soft Reset of Controller, Check batteries for low voltage
Pump Doesn't Start	Pipe is blocked	Ensure valves are open to clear airlocks
Pump Doesn't Stop	Check for leaks, Turn down pressure	Small leaks in plumbing are the most common, check around outlet cover, Turn down pressure setting
Pump Sputters	Pump not properly primed or air entering system	Prime pump and remove all air from system, check inlet pipes for leaks, Install foot valve for suction applications
Settings may have been changed	Reset to factory defaults	Press and hold "MODE" for three seconds
E01	Low input voltage	Check input voltage, Check battery voltage
E02	Over voltage input	Ensure input voltage is less than 280V AC
E03	Pressure sensor error	Hard Reset, Replace pressure sensor
E04	Pump over temperature	Remove pump from direct sun, Improve ventilation
E05	Pump Overload	Ensure water is fairly clear (no mud or large debris)
E06	Display over temperature or sensor failure	Remove from direct sun, Improve ventilation, Hard reset, Contact RPS
E07	Not Used	n/a, Hard Reset
E08, E09	Motor phase mismatch, Over current	Motor not operating at commanded speed, check for obstructions, check for stuck impellers
E10	Startup fault	Hard Reset, Contact RPS to check for impeller obstructions
E11	Motor communication error	Check for damage to motor wires, Hard Reset, Contact RPS
E12	Not used	n/a, Hard Reset
E13	Display communication error	Hard Reset, Contact RPS

TPP PUMP DIMENSIONS



Inlet	1.25" FNPT	**Power Range**	750 - 1500w
Outlet	1" FNPT	**Suction**	Up to 4M, 15ft (wetted)
Acceptable pH	5 - 8, Water (No Fuel)	**Max Current**	8 Amps
Temp. Range	0 - 40°C, 32 - 104°F	**Box Size**	394 x 260 x 330mm
Max Liquid Temp	90°C, 194°F	**Weight**	10kg, 22lbs

CONTROLLER DIMENSIONS



Compatible Pump	GLS, TP-750 Only
Battery Voltage	24 VDC Only
Battery Wiring	8AWG or Thicker
Dimensions	15in x 11in x 4in 378mm x 280mm x 103mm
Temp. Range	0 - 40°C, 32 - 104°F
OPTIONAL AC INPUT (See 220v Wiring)	220 VAC Only
Weight	7.8lbs
Recommended Clearance	Mount with 8 inches of space in all directions

WARRANTY: Rural Power Systems Inc extends to the original consumer purchaser a limited warranty against defects in material and workmanship for a period of twenty-four months from the date of purchase. This warranty covers the pump, controller, and solar panels. Rural Power Systems Inc will repair or replace any defective part or parts of the product free of charge within the first twelve months of purchase. In the event of a malfunction, the purchaser must return the product to receive a replacement. The warranty is limited to the repair or replacement of the product. Rural Power Systems Inc. disclaims all liability for indirect and/or consequential damages, such as any installation charges, damage to mounting structures/ buildings, or loss of revenue. The warranty does not apply when the equipment has not been installed according to the instructions or damage has occurred through abuse, carelessness, improper installation, accident of mishandling during shipment, or connecting to an improper voltage. Your warranty is linked to your product's serial number which is on record at Rural Power Systems Inc. All repairs not covered by warranty or outside the warranty period are charged at normal rates.

SUPPORT

Need additional help getting your system running?

If you're having issues getting your system pumping, please check out our YouTube channel! We have videos on each section of the setup including Wiring, Plumbing, Battery config, Well Seals and more!

For detailed videos on troubleshooting, visit:
RPSsolarpumps.com/help

youtube.com/**rpssolarpumps**

Contact an Engineer

At RPS, we're commited to making sure you get water when you need it. Our engineers are standing by to help with any issues. Give us a call or text at:

888-637-4493

Visit Us On YouTube

RPS Solar Pumps 40250 County Rd 27, Woodland CA 95776